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Islamic Science (Tawhidic): Toward Sustainable Development*

Mohd Yusof Hj Othman†

ABSTRACT

No one can deny that there is no civilization without the development of science and technology. The development of scientific knowledge also contributes to the enlightenment of intellectual capacity producing highly scientific literacy among people who have adopted rational and objective knowledge. Scientific knowledge is secular. There is no place for religious, cultural, and subjective arguments in the scientific approach. As a result, scientific development produces 'literates uneducated', 'excellence without soul', 'skilled barbarians' and persons possessing similar characteristics. Those who have high scientific literacy but are without a soul do more harm than good as mentioned by Harry Lewis [2006], a scholar from Harvard University. The development of scientific literacy, which has not been accompanied by spiritual development, produces unbalanced people in terms of their personality development, which finally produces an unsustainable civilization. As an alternative to the development of science which puts so much emphasis on rational thinking, we propose the acquisition of scientific knowledge which is in harmony with spiritual and personal development based on religion, culture, and subjective knowledge. In the past, the Muslim community has produced such scientists. This paper discusses the concept and philosophy of Islamic Science, which is sustainable, and both culturally and religiously friendly as an alternative to the present secular science.

1. Introduction

No one denies that science and technology have made great and significant contributions to the development of nation and civilizations. In addition, there has been not a single civilization which could rise without making contemporaneous progress in its science and technology. Science began as early as the existence of human beings themselves in this world. Moreover, science and technology could not possibly have been developed without the efforts of no other being than the one known as a man.

On the contrary, the downfall of a civilization is not because of its backwardness in science and technology, but rather the rise and fall of a civilization is due to its losing its values of humanity, and morality as well as its humanitarian identity, through emphasising

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physical and materialistic progress while ignoring the quality of humanness. Both Muslim and Western scholars have discussed these issues in depth. Among those who took note on such matters is Fritjof Capra [1982]. Capra, through his writing *The Turning Points*, has illustrated how severe is the current deterioration of humanitarian values that has accompanied the significant progress achieved in science and technology by mentioning,

> 'Our progress, then, has been largely a rational and intellectual affair, and this one-sided evolution has now reached a highly alarming stage, a situation so paradoxical that it borders insanity. We can control the soft landings of spacecraft on distant planets, but we are unable to control the polluting fumes emanating from cars and factories. We propose Utopian communities in gigantic space colonies but (we) cannot manage cities..... Those are the results of overemphasizing our 'yang', or masculine side — rational knowledge, analysis, expansion — and neglecting our 'ying', or feminine side — intuitive, wisdom, synthesis, and ecological awareness'

Buncker Roy [1990] once expressed his frustration with the present system of education which he described as an education that could only produce people whom he described as '*literates uneducated*'. In his observation, he said: '*Having literates do more harm than good*' which carries the meaning that those who are literate and highly educated can at times bring more harm to a nation than benefit. Just take a look at the increasing cases of power abuse and white collar crime, breach of trust, and sometimes well-organized crimes by those so-called 'literates' whose impact is worse than the uneducated, who only commit petty theft and robbery. To be noted too, is how developed nations which have advanced technology and highly literate citizens are terrorizing and lustful in their overpowering of small nations whose crimes may not be as hazardous as they claim. In the name of the war on terror, these savages have killed hundreds of thousands of innocent souls, children, women, and elderly people, and destroyed all kinds of properties and public infrastructures at a whim, all the while claiming to be upholding truth and justice and eliminating terrorism.

Professor Steven Muller, who was the president of John Hopkins University in the USA, as quoted by Robert Ulin [1980] once said:

> 'The failure to rally around a set of values means that universities are turning out potentially highly skilled barbarians'

Ulin, next listed several frauds and depravities involving highly educated elite who were entrusted with heading a number of financial agencies and had misused their position simply

for the sake of increasing their wealth and benefits for themselves and their cronies.

Professor Harry Lewis [2006], the Dean of Harvard College, in his book '*Excellence without a soul — 'Does Liberal Education Have a Future?*' questioned the education system of higher learning institutions in America. In it he describes how they had produced graduates with high expertise who had gone on to become involved in manipulation and speculation in the banking and finance system that resulted in the crises that have recently been hitting the financial institutions of Western and European countries like Iceland, Greece, Italy, France. He also remarked '*How a great university forgot education.*'

Lewis's views are well accepted by other scholars. Among them is Professor Vitz [2009], a professor emeritus in the field of psychology at the University of New York who stated there are three main phenomena he identifies as happening within today's Western's education system that are behind its learning institutes' production of the so-called '*excellence without soul*' graduates:

- The first phenomenon is the rise of **secularism**. Secularism or scientism (the overemphasis on a scientific approach — an extreme attitude in receiving scientific knowledge) in a way rejecting all other arguments based on religion and culture (which are claimed to be subjective knowledge) is prevalent in the education system at universities. This is because religion is considered to be '*a thing of the past*' (for primitive societies) with the concept of culture restricted to be merely artistic activities (visual and voice), excluding ways of thinking that are deemed crucial to the preservation of cultural virtues in building civilization. Culture and religion are currently being replaced by '*rational humanistic secular world*', arguing the need for the former to be subjugated to secular rationalism. Thus, this gives away to the rise of a segment of a society promoting human rights that presses and demands them to be given their rights and freedoms to violate all religious and cultural obligations. The nation's constitution, agreed by all parties to uphold religious and cultural relations, and the social contract to live in harmony, is now being challenged simply to fulfil extreme, selfish desires disguised as human rights.
- The second phenomenon is the **death of socialism**. Professor Paul Vitz believes that the socialist economic system no longer has a place in nation building, having been replaced by but an extreme capitalist system. This is replacing the former to the extent that the latter is being anticipated to fulfil all the needs of a borderless individual — one in which social responsibility is being replaced by the responsibility to develop the individual at the expense of dissolving social bonds (liberation) for the individual's benefits. Even the institution of marriage is in crisis (being challenged) for it needs to conform to the desires of the individual who has

established the marriage. Eric Klinenberg [2012], a professor of psychology at the University of New York was reported by Time (12 March 2012) to have said, one of the ideas which will change our ways of living in the future is the tendency or the new norm towards living alone, prioritizing the individual self over family members. This is due to excessive individual selfishness supplanting social needs and leading eventually to the collapse of the institution of family. At this moment some European countries, and Japan and South Korea are facing a low birth rate, albeit a diminishing younger generation, which is direly needed to support their countries' development.

We are also witnessing nowadays how government is incapable of developing an adequate policy to fulfil an individual's desires to the extent that a few developed nations are confronting banking and currency crises which have pushed them to the edge of bankruptcy (such as Italy and Spain), and there are already bankrupt nations like Greece and Iceland.

- The third is sexualism. What is meant by sexualism here is the outrageous sexual revolution which demands extreme sexual expression to be recognised as the norm within a society. It is precisely this that has leads to unwarranted sexual symptoms like gay marriage, and a return to outrageous polygamy (of both men and women). These sexual issues are later reflected in the emerging LGBT (L-Lesbian, G-Gay, B-Bisexual, T-Transvestite) movement. On the other hand religious taboos, and cultural and humanitarian values are rejected as intolerable. What is being promoted is a version of individual human rights, freedom and personal desires that needs to be liberated from ties to tradition, the influence of religion, culture and value systems. This movement is being executed globally and involves all stratas of society. Furthermore teenagers are being indoctrinated with the idea that their youthful period would be more meaningful if they were to practice out-of-marriage sex with their favourite partner. Whereas, the reality is, these teens would face an abundance of individual and social troubles had they not learned to control their lust from an early age.

The thoughts expressed in this paper were initiated by the late Khalijah Mohd Salleh [2009] and later on expanded by the author [Mohd Yusof 2010] to introduce the concept of Tawhidic Science so that it could be integrated with the conventional science curriculum which is currently taught to students all over the world.

2. Definition of Conventional Science

There is no single specific definition of what science is. What is clear is that a method to understand the natural world represents the most important base in developing science. That is why it is described as knowledge about the natural world. Another closely related knowledge

to scientific application is called technology or technical knowledge based on the scientific approach. To further our understanding of what exactly is 'science' as introduced in the West. let us start by studying the meaning of the term '*science*' itself. According to Peter Medawar [1984], the word '*science*' is a recently introduced term which is not found in previous civilizations. Therefore, in discussing what is meant by science, we shall use definitions provided by the Western scholars as they introduced it.

In tradition, science as pointed out by Western scholars can be defined as [Fowler 1978]

> '*Systematic and formulated knowledge*'

Meanwhile, the Dewan Bahasa dan Pustaka's English-Malay dictionary [DBP 1992] states science as,

> '*Systematic study based on observation and experiment*'

And Mortimer J. Adler [1976] claims that,

> 'Science is a search for a rational explanation of natural phenomena. It is continuing activity'

According to Peter Medawar [1984] the term '*science*' is derived from the Latin '*scientia*'. There are twelve words which describe the meaning of the word '*science*' as follow,

> 'sienz, ciens, cience, siens, syence, syense, scyence, scyense, scyens, scienc, sciens, scians'

All these have the Latin word '*scientia*', which means '*knowledge*', as their root;, that is say to what degree one knows about something. But then again, not all knowledge can be regarded as scientific knowledge. What is meant by scientific knowledge is [Medawar 1984],

> 'knowledge where its information (as a result from the observation of nature) generated and expanded systematically using certain methodologies based on certain premises by its observer until there is stack of a highly reliable and trusted knowledge, either through experiment or theoretically logical argument'

For Medawar, scientific truth is a truth based on a goal or aim to be achieved by a task done by a scientist via what is known as asymptote; that is it is inconclusive and not absolute truth; which while it is still open to doubt and criticism, is assumed to be so. Science only provides a means to direct how scientific research can be carried out, but not the final goal to be reached. Hence the exploration of knowledge, about the natural phenomenon under study, always changes and is not fixed. The history of science shows us, for example, how scientific theory pertaining to outer space (such as the theory of the beginning of universe) has continued to change from ancient times to the present day; from the assumption and belief that our world was located at the end of a bull's horn to the big bang theory which is popularly accepted currently. The same can be said about the theory of the atom which constantly undergoes changes whenever a subsequent new theory is proposed. All scientific theories will keep on expanding and changing throughout time relative to the understanding of the contemporary observers. This demonstrates that a scientific knowledge is not absolute, but subject to change.

After paying close attention to the history of scientists and their contribution to Western science and technology, Crump [2002] found that it is difficult to distinguish between the terms used for sciences and those which are reserved for knowledge as in the Latin word pronounced as '*scientia*'. Crump stated that the Latin word '*natura*' which was often used to describe the world around us and was later adopted into English as '*nature*', conveys knowledge regarding the nature of an object under observation. The closer Latin expression is '*physica*' which carries the same fundamental meaning as physics as is in the Greek term '*physis*'. In general, Crump [2002] defined science as,

> 'Science is the aggregate of systematized and methodical knowledge concerning nature, developed by speculation, observation and experiment, leading to objective laws governing phenomena and their explanation'

What is meant by 'laws' here is the natural laws obeyed by an object under observation that can be studied repeatedly. For instance study of why an object falls when it is released from a certain height; why a tree needs sunlight to grow; why fire burns; why a sharp knife cuts; why water when chopped would not split and other natural phenomena can be considered as science because they follow certain rules. It is obvious that there is an underlying rule, which can be followed and understood, as to why an object falls when it is released, why fire burns, why a sharp knife cuts, and so on. Correctly speaking, it is these existing rules which are of interest for scientific study.

For Shaharir Mohamad Zain [1987], as mentioned in his book *Pengenalan Falsafah Sains* (Introduction to Philosophy of Science), the common definition of science as backed by

most scholars can be stated as,

> 'Science is a systematic, logical and objective analysis of a phenomena (of the natural world)[1] with specific methods adopted towards establishing a stock of reliable knowledge.'

This definition certainly has a lot of weaknesses, and is no longer considered as correct. Criticism of this definition has been argued at length in this edition and the next [Shaharir 1998].

Although this very definition could be refined and be argued even further, in general, we could say that pure science is a knowledge centred on how man is able to observe and pay attention to natural activity according to its disposition. The results of this systematic observation is later argued and analysed logically and objectively, a series of experiments are carried out and comparison with the underlying assumed theories is made. This knowledge is nurtured and expanded subsequently to further enrich the scientific knowledge itself.

Following Toby E. Huff [1995], the philosophy of pure science requires three basic premises:

- First of all, scientists must feel confident and believe that the natural world is regular and in a certain order and arrangement. This implies that the components of the world are related to one another coherently, regular, obeying certain rules or laws, and lie within a predictable domain or can be anticipated. This serves a very basic premise in developing scientific knowledge. Without such conviction or assumption, there is in no way the nature could be understood via scientific approach.
- Secondly, scientific argument also presupposes man could or is able to give reason or rationale to the observed phenomena. Thus man has the mental or reasoning ability to comprehend nature by carrying out investigation through rational argument. However, scientists also believe and are convinced that theories about a certain natural scientific phenomenon might be wrong at times, and simultaneously, they also believe that it is not possible for them to discover everything concerning the nature of the world they observe. And yet they are of firm conviction that eventually man will be able to give his explanation via a systematic, logical and objective inquisition. Therefore, they strongly believe this scientific investigation must be

1 Within the bracket is added by author, for what are studied by scientists are the properties exhibited in nature. Not every phenomena could be studied by scientists, examples are the meaning of happiness, and supernatural phenomena as perceived and understood by man in religion. Social phenomena should also be excluded from scientific study. Such phenomena for examples are why we need to greet when attending a function, lowering one's head to show respect to an elderly people, etc.

executed persistently to refine their understanding of nature.

- Thirdly, the philosophy of natural science also presumes everyone, man or woman, Eastern or Western, is allowed to use his or her intellectual power to inquire and give reasoning about an observed phenomenon. They are also autonomous in questioning everything regarding the scientific truth that they claim. Scientists also hold to the belief that having carried out a scientific investigation; everyone would come to the same conclusion pertaining to what has been observed or seen, even if they are living in different places, having different cultures and languages. With such an assumption, they believe that scientific knowledge is universal, unlike the culture, customs and values of a society, which are localized in nature.

Based on the previous definition and premises, we could conclude in order to develop science and technology as viewed through the lenses of Western scholars; we must give attention and focus to the following five points,

- This world has rules to be observed. Therefore a scientist must be capable and competent enough to observe the natural world which has its own peculiar rules and laws that must be obeyed.
- Human ability lies in its potential to give an explanation and rationalise why the observed natural phenomena occur in the way they do. The given explanation must be systematic, rational and objective. What is meant by 'objective' here is as defined by the Oxford English Dictionary [Fowler 1978] '*dealing with outward things or exhibiting facts uncoloured by feelings*'. In other words one must put aside all religious and cultural values or customs when performing a scientific observation.
- Employing an appropriate method to comprehend a phenomenon under study. This method is what is known as scientific method. This method is the only method accepted or relied on by the scientific community. It can only assume a form of either experimental or theoretical argument.
- Accumulating knowledge regarding the study of a natural phenomenon. Since scientists believe that scientific research is a continuous process as long as man can reason systematically, logically and objectively, thus a new knowledge obtained from the present observation will be accumulated into the existing knowledge about the same phenomena under study that has been carried out previously.
- Since scientists are highly convinced that their research is not absolute, and could always be explained in more detail later on by those with more discerning minds, then they will have to state their degree of reliability regarding the natural phenomenon which they are observing. This degree of reliability is stated in its

precise form as 'error analyses'. In error analyses, scientists believe that there are two causes contributing to an observation's imperfection; systematic error due to the limitations inherent in the instrumentation when making careful measurement, and an error made by the observing scientist which is called random error.

These are the approaches taken by the Western scientists in developing their scientific knowledge.

3. Philosophy Of Islamic (Tawhidic) Science

The concept of Tawhid is a central concept to Muslims. It is expressed in four verses of al-Qur'an as immortalized in Surah *al-ikhlas* (Chapter 112), which can be translated as follows:

'*Say (O Muhammad), He is Allah, and (the) One*'
'*Allah the Self-Sufficient Lord, Whom all creatures ask for all their needs'*
'*He begets none, nor is He begotten*'
'*And none is equal to Him.*'

Islamic Science or Tawhidic Science is the knowledge about the natural world which submits itself to or is within the scope of philosophy behind the above chapter. We could describe the framework of Tawhidic science as illustrated in Figure 1 below.

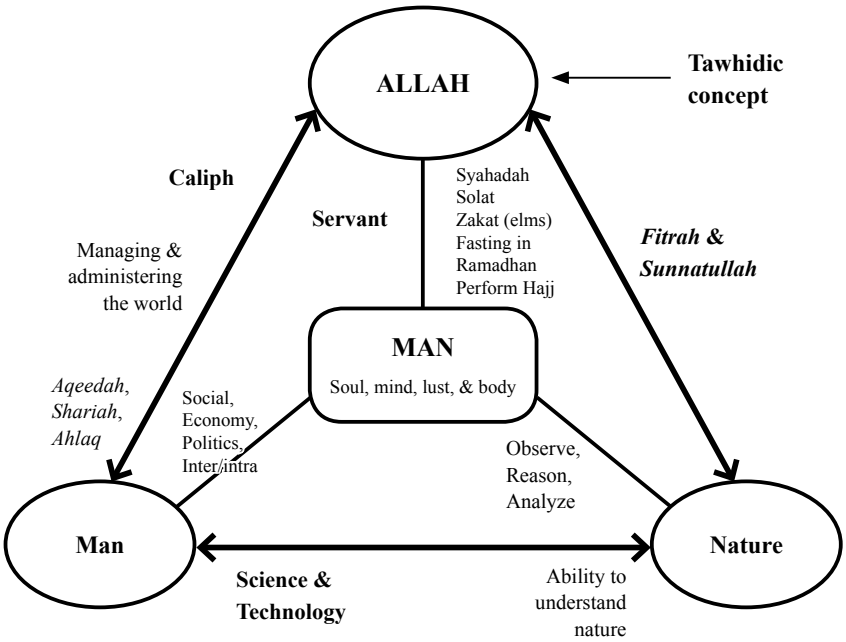

Figure 1: Basic entities in the framework of Tawhidic science.

At its simplest, within the framework of Tawhidic science, there are three main entities that are to be considered: God, man and nature; whereas in the conventional science the entity of God is absent. Therefore, the relationship between all these three entities must be understood in order to comprehend the concept of Tawhidic science.

3.1 The Relation between Man and God

The leading relation between man and God is that man is a servant of Allah. As a servant, man must obey and submit himself totally towards Allah SWT. This total submission is stated in three entities — *aqeedah* (faith) which is the philosophy, concept and the creed underlying the life of a Muslim; *shariah* (law) which is a set of rules that must be obeyed by all Muslims based on the teachings of al-Qu'ran, the practices (*sunnah*) of the messenger of God, prophet Muhammad (pbuh) and the consensus of *ulama* (Islamic clerics); and *akhlaq* (moral behaviour) that is moral values as highlighted in al-Qur'an and exemplified by God's messenger, Rasulullah (pbuh).

Secondly, man is appointed by Allah as His caliph (vicegerent) to govern, manage and administer the world as mentioned in al-Qur'an in Surah *al-Baqarah* (Chapter 2, verse 30). The world that needs to be managed and governed by man is the human world as well as the natural world created by Allah SWT. Hence, the relations between men, as well as the relationship between man and nature must be understood and acknowledged by Tawhidic scientists during the execution of their scientific activities.

3.2 The Relations between Men

Relations between men constitute relations between them known as interpersonal relationships as well as the relationship between a man and his own self, named an intrapersonal relationship.

Interpersonal relations require good social relationships between men. An example is provided by the following Qur'anic verse:

> 'O believers! If a wicked person brings you a piece of news, inquire first into its truth, lest you should wrong others unwittingly and repent of what you have done.'
>
> *al-Hujuraat* (49); 6.

> 'O believers! Let not some men among you deride others, who may perhaps be better than they are. Nor let some women mock others, who may perhaps be better than they are. Do not defame one another, nor call one another by offensive nicknames.'
>
> *al-Hujuraat* (49); 11

> ‘O believers! Avoid most of suspicious (so that you will not harbour suspicion which are forbidden), for in some cases, suspicion is a sinful.’
>
> *al-Hujuraat* (49); 12

> ‘O believers! Why do you say what you never do?’
> ‘It is most odious in Allah’s sight that you should say that which you do not do.’
>
> *as-Saff* (61); 2 & 3

Meanwhile an intrapersonal relationship is a relation between a human being and himself or herself which is established to check and improve one’s performance. Elements of an intrapersonal relationship are *muhasabah* (self-reflection), *wirid*, *doa*, *zikir*, enhancing and increasing one’s ritual practices to God such as *solat* (praying), performing *hajj* and *umra*, giving elms and charity, etc. All these practices are admirable *ibadah* (rituals) and are practiced frequently by all eminent Muslim scholars of the past. In other words, in his intrapersonal relationship, a Tawhidic scientist must always strive to address each of his aspects; *ruh* (soul), *qalb* (heart), *nafs* (emotion), *aqal* (mind) and *jasad* (body). These five aspects are the most basic elements of man. Developing and controlling all these five elements within a man represents the foundation of Islamic education.

Both interpersonal and intrapersonal relationships among men cannot be practised at the expense of ignoring man’s relationship with his God.

3.3 The Relationship between Nature and God

The relation between nature (all creatures in this natural world) and God manifested as forms of disposition and *sunnatullah* (Allah’s will). The world has its own internal disposition or natural tendency as created by Allah SWT. Men are endowed by Allah with the ability to understand the natural world to a limited degree. For example, fire burns, a sharp knife cuts, an object released from a certain height falls, a copper wire conducts electricity, rubber insulates heat and so on. In conventional science, it is these natural aspects of the world which man studies from its macro properties down to its micro or nano properties. Men are endowed with such an ability to understand the natural world for they have been appointed by Allah SWT as caliphs to rule, govern and manage this world with accountability and responsibility.

Within the understanding of Tawhidic scientists, the world has certain characteristics that could be apprehended by man as they are understood by conventional science. But Tawhidic scientists believe that these natural characteristics occur only with the permission of Allah. Conventional scientists, on the other hand, believe these things occur by pure chance without an external force overseeing them. Thus, Tawhidic scientists concede that fire burns,

but hold that the ability to burn is not absolutely intrinsic to fire but rather by the permission of Allah SWT. It is seen then why would Tawhidic scientists hold onto their conviction firmly as to why prophet Ibrahim AS was not burned when he was thrown into ferment fire by King Namrud, for Allah SWT did not permit the fire to burn him as described in al-Qur'an in Surah *al-Anbiyaa'* (Chapter 21, verse 69): *We said, 'O fire, be cool and safe for Ibrahim'*. The same can be said about other stories mentioned in al-Qur'an which cannot be rationalized scientifically.

Men are given the ability to understand nature because we have been appointed by Allah to govern and manage it. How could we possibly do so if it was not for the ability endowed us by Him to comprehend the natural world? This is the very reason why a Tawhidic scientist would strongly believe his knowledge of the nature world is limited, and this limited knowledge lies within a domain that could be captured and understood by his mind rationally and systematically.

3.4 The relationship between man and nature

A Tawhidic scientist accepts the fact that as a caliph; the world is Allah's trust to mankind to be guarded and managed, and it must be utilised with full efforts to gain the maximum benefit. Hence, man has this potential to observe and understand nature, and to derive lessons from the created world of Allah. Man must use all the available mind potential granted to him by Allah within certain limits. Man can also reason, analyse and give meaning to what he observes. Man's knowledge about the world is only as far as what can be observed, and the interpretations given to the natural phenomenon observed. As aforementioned, Tawhidic scientists admit they could not possibly understand every single secret of the universe in its absolute sense, even though a persistent study has been carried out from one level of thinking to a higher one; from the macro world to the micro and the nano; from a classical approach to that of current quantum and relativistic approaches.

4. Conclusion

No one could deny that today's science and technology have contributed enormously to the development of nations in particular, and to civilization in general. We have been blissfully enjoying all too many achievements derived from them. However, at the same time, it cannot be denied that the current practices of science and technology have lead to an unsustainable ecosystem; thereby causing global warming, a more frequent volcanic eruptions, earthquakes, typhoon, tsunami, air, and water pollution, and deforestation. Meanwhile, economic developments that put God aside are giving rise to a new, secular man who exploits, speculates and manipulates natural resources voraciously to the level of crumbling national economic systems. The severe collapse of social systems gives rise to a whole new younger generation

with a loss of self-identity, producing social symptoms such as the LGBT movement which advocates outrageous demands in the name of human rights. All these are due to an over reliance on objective, rational intelligence while neglecting tradition, culture, human values, natural law and other matters pertaining to Divine revelation.

What is apparent is that the world badly needs sustainable ecological development and social equality, and that these cannot be achieved by continuing to ignore the unity of God the Almighty. Sustainability in nature is only possible when development takes into account all the three entities; an integrated, balanced relationship between man, nature and God. Tawhidic science is scientific knowledge developed in conformity with the Shariah of Islam for understanding the natural world systematically and rationally, without ignoring man's responsibilities towards,God, the one creator of the worlds. God or Allah in Islam is understood by Muslims to be the only One, the Unity, as stated by Allah SWT in al-Qur'an as defined in the four verses of Surah *al-Ikhlas* (Chapter 112) mentioned in Section 3.0.

The current challenges faced by our world (global warming, the currency crisis, the collapse of financial systems, and social injustice as well as loss of self-identity) require a vigorous solution by every group. Such problems can only be solved if we are prepared to develop this world economically and socially by taking into account our responsibility towards Allah SWT, the One Almighty God to whom all power truly belongs, who orders the universe.

Muslim scientists must have the courage to change the system of science education, which involves the development of humanitarian values in accordance with the Shariah of Islam as well as the views of enlightened Western scholars as discussed in this paper. The impoverishment of admirable spiritual values in today's education system is leading to a large gap in the building of well-grounded scholars of excellent character. Indeed the world needs intellectuals for the development of nations and the advance of civilization. Yet, mere intellectual development alone cannot guarantee sustainable development if spiritual development is side-lined.

Wallahu'aklam.

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